A RADIO TELECOMMUNICATIONS SYSTEM OPERATIVE BY INTERACTIVE DETERMINATION OF SOFT ESTIMATES, AND A CORRESPONDING METHOD

ABSTRACT

A radio telecommunications system is provided operative to communicate digital data symbols with higher than quadrature phase shift keying (QPSK) modulation. The system comprises a transmitter (1) and a receiver (2). The transmitter (1) comprises a modulator (d) and means (a, b, c, □) to split and encode the data into a first block of more significant bits of symbols and a second block of less significant bits of the symbols for modulating by the modulator (d). The receiver (2) is operative to receive digital data bits by iterative determination of soft estimates of bits followed by a hard decision as to what bit was intended. The receiver (2) comprises a first processor (3) operative to provide first soft estimates of bits of the received signal, and a second processor (13) operative to decode the first soft estimates and to provide second soft estimates of the bits. The receiver (2) also comprises a first combiner (11') operative to provide adapted first soft estimates to the second processor (13), the adapted first soft estimates of each bit being dependent upon the respective first soft estimate and a respective previous first soft estimate. The receiver (2) also comprises a second combiner (17) operative to provide third soft estimates back to the first processor for subsequent further decoding, the third soft estimates of each bit being dependent upon the respective second soft estimate and a respective previous second soft estimate.